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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,748	12/09/2003	Charles R. Rapier	1856-42300 (9719.0-02)	4300

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EXAMINER

DANG, THUAN D

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/731,748

Applicant(s)

RAPIER ET AL.

Examiner

Thuan D. Dang

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 21-66 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 12/9/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/29/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 32, 33 and 49-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 32, 33, and 49, the term “substantially free” makes these claims indefinite since it is unclear how much of oxygen and catalyst material are considered to be “substantial free”.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 44-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Griffiths et al (6,433,234).

Griffiths discloses a process including steps. The first step is a combustion between a gaseous fuel such as carbon monoxide with oxygen to produce a product stream and unreacted oxygen and a step of contacting the product of the first step with a second feed containing

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hydrocarbon such as alkane to produce olefin (the abstract; col. 2, lines 39-40, lines 63-65; col. 3, lines 25-36; col. 4, lines 56-65).

On column 1, lines 39-47, Griffiths disclose the heat produced from the first step is used drive the cracking in the second step.

Griffiths also disclose that the first reactor and the second reactor are in fluid communication with one another (col. 3, lines 63-66).

One of kinds of fuel of the first step of the Griffiths process is carbon monoxide (col. 2, line 41).

The hydrocarbon feed is ethane which is used to produce ethylene (col. 4, lines 59; examples).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21-33, 35-43, 48-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al (6,433,234).

Griffiths discloses a process including steps. The first step is a combustion between a gaseous fuel such as carbon monoxide with oxygen to produce a product stream and unreacted oxygen and a step of contacting the product of the first step with a second feed containing hydrocarbon such as alkane to produce olefin (the abstract; col. 2, lines 39-40, lines 63-65; col. 3, lines 25-36; col. 4, lines 56-65).

The major difference between the claimed process as called for in claim 21 and 49 and the process of Griffiths is that while applicants claim the content of oxygen in the first product of less than about 1,000 ppm and a supplemental amount of oxygen supplied for the second step, Griffiths discloses generally that the first product contains unreacted oxygen which is used for the second step (see entire patent for details).

However, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Griffiths' process by selecting an amount of unreacted oxygen contented in the first product and supplying a supplemental amount of oxygen

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needed for the second step to arrive at the applicants' claimed process since it has been held by the patent law that the selection of reaction parameters such as temperature and concentration would have been obvious. More particularly, where the general conditions of the claimed are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233, 255 (CCPA 1955). *In re Waite* 77 USPQ 586 (CCPA 1948). *In re Scherl* 70 USPQ 204 (CCPA 1946). *In re Irmscher* 66 USPQ 314 (CCPA 1945). *In re Norman* 66 USPQ 308 (CCPA 1945). *In re Swenson* 56 USPQ 372 (CCPA 1942). *In re Sola* 25 USPQ 433 (CCPA 1935). *In re Dreyfus* 24 USPQ 52 (CCPA 1934). Further, it is expected that using any amount of oxygen for each of these two steps would yield similar results.

The ratio of the fuel and oxygen can be found on column 2, lines 49-55.

It appears that Griffiths does not disclose preheating the first feed (see entire patent for details). However, to starting a combustion, heat is required. Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Griffiths process by preheating the feed to make the combustion possible.

The temperature of the second step can be found on column 5, line 60.

The combustion catalyst can be found on column 3, lines 1-7 and 35-50.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al (1) (6,433,234) in view of Griffiths et al (2) (6,395,944).

Griffiths (1) discloses a process as discussed above.

Griffiths (1) does not disclose the oxidative cracking step in the absence of a catalyst. However, Griffiths (2) discloses that the same process can be operated in the presence or absence of catalyst (see the abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Griffiths (1) process by excluding the catalyst since it is expected that the oxidative cracking step with or without catalyst would yield similar results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 571-272-1445. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thuan D. Dang
Primary Examiner
Art Unit 1764

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